

CLAIMS:

1. A device comprising:

a membrane having first and second faces;

a first substrate disposed on the first face of the membrane and having (i) a plurality of first absorptive regions and (ii) a plurality of first reflective regions formed as wells in a face of the first substrate, the first absorptive regions and the first reflective regions arranged in a pre-defined grid pattern; and

a second substrate disposed on the second face of the membrane and having (i) a plurality of second absorptive regions and (ii) a plurality of second reflective regions formed as second wells in a face of the second substrate, the second absorptive regions and the second reflective regions arranged in the pre-defined grid pattern;

wherein the pre-defined grid pattern is arranged in accordance with a random binary sequence where a zero of the binary sequence is represented by a first absorptive region of the plurality of first absorptive regions and a one is represented by a first reflective region of the plurality of first reflective regions, and the second substrate is disposed on the second face of the membrane 180 degrees out of phase relative to the first substrate.

2. The device of claim 1, wherein the random binary sequence is generated by a Gaussian random number generator.

3. The device of claim 1, wherein the membrane, the first substrate, and the second substrate are rectilinear in shape.

4. The device of claim 1, wherein there is an equal distribution of first absorptive regions and first reflective regions in both the vertical and horizontal directions, respectively, of the first substrate and there is an equal distribution of second absorptive regions and

second reflective regions in both the vertical and horizontal directions, respectively, of the second substrate.

5. The device of claim 1, wherein the first and second substrates are made of compressed fiberglass.

6. The device of claim 1, wherein the membrane is made of a solid material.

7. The device of claim 1, wherein each of the first and second substrates are no greater than two inches thick.

8. The device of claim 8, wherein the membrane is no greater than 1.7 ounces per square ft.

9. The device of claim 1, wherein the membrane is made of a non-porous material.

10. The device of claim 1, wherein the first and second substrates and the membrane are at least partially covered by a fabric.

11. The device of claim 1, wherein the wells are cylindrical in shape.

12. A method of manufacturing a device, comprising the steps of:

providing first and second substrates and a membrane;

generating a random binary sequence;

punching a plurality of wells into both the first and second substrates in a grid pattern in accordance with the random sequence where a zero of the random sequence corresponds to a well, the first substrate having wells punched therein in accordance with the same random sequence;

attaching the first substrate to a first face of the membrane; and

attaching the second substrate to a second face of the membrane such that the second substrate is disposed on the second face of the membrane 180 degrees out of phase relative to the orientation of the first substrate on the first face of the membrane.

13. The method of manufacturing of claim 12, wherein the generating step includes the step of using a Gaussian random number generator to generate the random well sequence.

14. The method of manufacturing of claim 12, further comprising the step of:
generating a check sum to confirm that an equal number of ones and zeroes are generated in the binary number sequence in both the vertical and horizontal directions of the grid pattern.

15. The method of manufacturing of claim 12, further comprising the step of:
covering at least a part of the first and second substrates and the membrane with a fabric.